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Crystal Structure of Ribosome Anti-Association Factor eIF6

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ABSTRACT: Eukaryotic initiation factor (eIF) 6 binds to the large ribosomal subunit, thereby preventing inappropriate interactions with its small counterpart during initiation of protein synthesis. We have determined X-ray structures of two eIF6 homologues, *Methanococcus jannaschii* archaeal aIF6 and *Saccharomyces cerevisiae* eIF6, revealing a phylogenetically-conserved 25kDa protein consisting of five quasi-identical alpha/beta subdomains arrayed about a five-fold axis of pseudosymmetry. Ribosomal subunit anti-association activity is supported by this unusual pentamer structure. Comparative protein structure modeling with other known archaeal and eukaryotic homologues demonstrated the presence of two conserved surface regions, one or both of which may bind the large ribosomal subunit.